

VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a Minor, Municipal permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et.seq. The discharge results from the operation of a 0.010 MGD Purestream extended aeration package sewage treatment plant consisting of: inlet bar screen, comminutor, surge tank, aerated sludge storage tank, final settling tank (clarifier), sludge return air lift, air lift skimmer, froth control system, tablet chlorinator, chlorine contact tank, and tablet dechlorination facilities. This permit action consists of limiting pH, BOD₅, total suspended solids, total residual chlorine, and dissolved oxygen; and including special conditions regarding compliance reporting, financial assurance and disclosure to purchasers, and other requirements and special conditions. SIC Code: 4952

1. Facility Name and Location:
Robinette Mobile Home Park WWTP
7610 Kashmir Way
Norton, VA 24273
2. Permit No. VA0092045
Previous Effective Date: January 10, 2012
Previous Expiration Date: January 9, 2017
3. Owner Name and Address:
Deborah K. Fleming
19347 Hunt Club Road
Abingdon, VA 24211

Telephone No.: (276) 676-0097
4. Application Complete Date:
Permit Drafted By: Fred M. Wyatt, SWRO Date: September 20, 2016
Reviewed By: Steve E. Anty Date: 9/21/2016
Public Comment Period Dates: from _____ to _____
5. Receiving Stream Name: Guest River; River Mile: 6BGUE027.03; Basin:
Tennessee-Big Sandy River; Subbasin: Clinch River; Section: 2; Class:
IV; Special Standards: None; Latitude: 36° 58' 51'';
Longitude: 82° 37' 26''

7-Day, 10-Year Low Flow (7Q10): 0.14 MGD (June - Nov.)
1-Day, 10-Year Low Flow (1Q10): 0.12 MGD (June - Nov.)
7Q10 High Flow: 0.55 MGD (Dec. - May)
1Q10 High Flow: 0.48 MGD (Dec. - May)
30-Day, 10-Year Low Flow (30Q10): 0.18 MGD (June - Nov)
30Q10 High Flow: 1.39 MGD

Tidal? No

303(D) list? Yes (See Item # 13 below).
6. Operator License Requirements: None

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7. Reliability Class: III

8. Permit Characterization:

(X) Private () Federal () State () POTW () PVOTW
() Possible Interstate Effect () Interim Limits in Other Document

Since this facility is privately owned and is being permitted as a 0.010 MGD facility, the Financial Assurance Regulation (9 VAC 25-650-10 et seq.) must be addressed. The intent of this regulation is to provide for the continued provision of essential service and/or the operation of a privately owned wastewater treatment facility in accordance with the terms and conditions of a VPDES permit, without the expenditure of public funds, in the event that a small privately owned treatment facility is abandoned by it's owner or operator or otherwise ceases to operate.

The owner submitted and DEQ approved, by letter dated December 29, 2006, the original closure plan, cost estimate, and financial assurance mechanism. The owner has updated, each year, the financial assurance mechanism to account for inflation. With this reissuance application, the owner has submitted a new closure plan and cost estimate that increases the required operation period from 90 days to 24 months after the facility is closed, as required by the Regulation. The financial assurance mechanism must be increased to cover the increased costs of this increased operation period.

9. Attach a schematic of wastewater treatment system, and provide a general description of the activities of the facility.

Discharge Description

OUTFALL NUMBER	DISCHARGE SOURCE (1)	TREATMENT (2)	FLOW (3)
001	Robinette Mobile Home Park WWTP	See Page 1 above, first paragraph	0.010 MGD

(1) List operations contributing to flow (2) List treatment units
(3) Design flow

10. Sewage Sludge Use or Disposal: The sludge management consists of periodically pumping and hauling the sludge to the Coeburn-Norton-Wise Regional WWTP, which operates under VPDES Permit No. VA0077828, for incorporation into the treatment process.
11. Discharge Location Description: See attached Quadrangle: Wise; Number 060A.
12. Material Storage: None reported
13. Ambient Water Quality Information: The 2014 Impaired Water Fact Sheets (attached) list mainstem Guest River as impaired from its headwaters near Fox Gap downstream to the confluence of Sepulcher Creek at Addington, WQS Section 2. The stream is not supporting aquatic life uses. The impairment is listed as benthic-macroinvertebrate bio-

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assessments and the cause is sedimentation-siltation. The sources are listed as coal mining, impacts from abandoned mine lands (inactive), surface mining, rural (residential areas), and silviculture activities. A TMDL Report for sediment was developed and was approved by EPA on 11/13/2003 and by the State Water Control Board on 03/23/2004. This facility was not included in the original TMDL and required a minor modification to include a sediment (total suspended solids) wasteload allocation of 0.402 tons per year or 2.19 lbs/day for this facility. This modification was approved by EPA on February 8, 2007 and by the State Water Control Board June 27, 2007.

The 2014 Impaired Water Fact Sheets also list this segment in as impaired in not supporting the recreation use goals. The cause of the impairment is E.coli and the source is rural (residential areas) and sewage discharges in unsewered areas. A TMDL was approved for the *Bacterial TMDL Development for the Lower Clinch River Watershed* by EPA on 6/25/2014 and by the State Water Control Board on 6/26/2014.

14. Antidegradation Review & Comments: Tier I (X) Tier II () Tier III ()
The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier I or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters. The antidegradation review begins with a Tier determination. Since the receiving stream is impaired due to sediment loadings, it is determined to be a Tier I waterbody.
15. Site Inspection: A technical inspection was conducted on 6/17/2015 by Allen Cornett, SWRO.
15. Effluent Screening & Limitations Development:
 - a. pH: A pH range of 6.0 - 9.0 standard units is assigned to Class IV waters per the Virginia Water Quality Standards.
 - b. Biochemical Oxygen Demand BOD₅ and Dissolved Oxygen: The staff used the steady state Streeter Phelps Regional Modeling System (V 4.0) to project acceptable dissolved oxygen and biochemical oxygen demand. The 7Q10 flow frequency was used in these calculations. TKN values used in the model were calculated by adding a 3 mg/l refractory nitrogen value to the ammonia nitrogen toxicity values which were calculated based on the Virginia Water Quality Standards. The model indicated that secondary treatment level BOD₅ effluent limitations (30 mg/l monthly average and 45 mg/l weekly average) were adequate to protect aquatic life.

- c. *Total Suspended Solids*: Total Suspended Solids effluent concentrations are 30 mg/l monthly average and 45 mg/l weekly average, which are the minimum Federal secondary treatment levels.
- d. *Ammonia Nitrogen*: Effective on August 27, 2003 the State Water Control Board adopted new criteria for ammonia nitrogen (9VAC25-260-155). An acute ammonia nitrogen standard is now calculated without consideration of the stream temperature. The 90th percentile pH from Storet data at milemarker 6ALEV131.52 and best professional judgment was used with the ammonia tables in the Water Quality Standards to determine the acute ammonia criteria value. The acute criteria are more restrictive if the trout species are present (*only Class V or VI waters*). The 1Q10 flow frequency value and high flow 1Q10 frequency value were used to calculate the steady state waste load allocations for both the low stream flow season and the high stream high flow season respectively.

A chronic ammonia nitrogen standard is now calculated by considering whether or not the early life stage of fish are present or absent. The 30Q10 flow frequency value and the high flow 30Q10 frequency value are used to calculate the steady state waste load allocations for both the low stream flow season and the high stream high flow season respectively.

The 90th percentile pH from Storet data at milemarker 6BGUE026.55 and best professional judgment, were used to determine the chronic criteria value from the Water Quality Standards.

- e. *E.coli Bacterial Standards*: A geometric mean 126 n/100 ml is assigned to Class IV waters, per the Virginia Water Quality Standards. On January 15, 2003, new bacteria standards in the Water Quality Standards Section 9VAC25-260-170.A became effective, as did the revised disinfection policy of 9VAC25-260-170.B. These standards replaced the existing fecal coliform standard and disinfection policy of 9VAC25-160-170. In short, E.coli criteria replaced the existing fecal coliform criteria for freshwater. For major and minor VPDES permits with an EPA approved TMDL, which has a wasteload allocation for bacteria for that facility, E.coli limits are also required. Although chlorine residual is still considered the primary assurance of adequate disinfection, E.coli limits must be incorporated in these permits. Therefore, E.coli sampling is required in any single month of each calendar year, at a frequency of four (4) samples per month. The Water Quality Standards 9VAC25-260-170 allows for geometric means to be calculated using all data collected during any calendar month with a minimum of four weekly samples, collected at least 7 days apart between the hours of 10:00 a.m. and 4:00 p.m. E.coli bacteria shall not exceed a monthly geometric mean of 126 CFU/100 ml in freshwater.

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Basis for Effluent Limitations: 0.01 MGD

PARAMETER	BASIS FOR LIMITS *	DISCHARGE LIMITS				MONITORING REQUIREMENTS	
		MONTHLY AVERAGE	WEEKLY AVERAGE	MINIMUM	MAXIMUM	FREQUENCY	SAMPLE TYPE
Flow	NA	NL	NA	NA	NL	1/Day	Estimate **
PH	2	NA	NA	6.0 SU	9.0 SU	1/Day	Grab
BOD ₅	2,5	30 mg/l 1.1 kg/d	45 mg/l 1.7 kg/d	NA	NA	1/Month	Grab
Total Suspended Solids	1	30 mg/l 1.1 kg/d	45 mg/l 1.7 kg/d	NA	NA	1/Month	Grab
Total Residual Chlorine ***	2,5	0.12 mg/l	0.14 mg/l	NA	NA	1/Day	Grab
Dissolved Oxygen	2,5	NA	NA	6.0 mg/l	NA	1/Day	Grab
E.coli (n/100 ml), Geo Mean	2	126, 10:00 a.m. - 4:00 p.m.	NA	NA	NA	1/Year ****	Grab

- *1. Federal effluent guidelines
- 2. Water Quality-based Limits:
- 3. Best Engineering Judgement
- 4. Best Professional Judgement
- 5. Other (e.g. wasteload allocation model)

** Estimated average daily flowrate shall be based on the most accurate method or device available such as: weir, potable water meter, pump rates, etc....

*****Additional TRC Limitations and Monitoring Requirements (PART I.B. of Permit):**

- The permittee shall monitor the total residual chlorine (TRC) at the outlet of each operating chlorine contact tank, 1/day by grab sample.
- No more than three (3) of all samples for TRC taken at the outlet of each chlorine contact tank shall be less than 1.0 mg/l for any one calendar month.
- No TRC sample collected at each outlet of the chlorine contact tank shall be less than 0.6 mg/l.
- If dechlorination facilities exist, the samples above shall be collected prior to dechlorination.
- If chlorine disinfection is not used, E.coli shall be limited and monitored by the permittee as specified below and this requirement, if applicable, shall substitute for the TRC and E.coli requirement delineated elsewhere in Part I of this permit.

	Discharge Limitations		Monitoring Requirements	
	Monthly Avg.	Weekly Avg.	Frequency	Sample Type
E.coli (N/100ml)	126*	NA	1/Week**	Grab
* Geometric Mean				
** Between 10:00 a.m. and 4:00 p.m.				

**** E.coli sampling may be conducted in any single month of the calendar year. Four (4) E.coli samples shall be taken, with at least 1 sample taken each calendar week, in any calendar month of each year. Samples should be taken at least seven days apart within the chosen month. The results are to be calculated and reported as a Geometric Mean of the 4 samples collected during any single month.

- Basis for Sludge Use & Disposal Requirements: VPDES Permit Regulation, 9VAC25-31-100 P; 220 B.2.; and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on sludge use and disposal practices and to meet specified

standards for sludge use and disposal.

18. Antibacksliding Statement: Since no effluent limitations are being changed in this reissuance, the antibacksliding provisions of the Permit Regulation (9 VAC 25-31-220.1) do not apply.
19. Compliance Schedule: NA
20. Special Conditions:

PART I.B. Special Condition - Additional (TRC) Limitations and Monitoring Requirements

Rationale: Required by Sewage Collection and Treatment Regulations, 9VAC25-790. Also, 40 CFR 122.41(e) requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. This ensures proper operation of chlorination equipment to maintain adequate disinfection.

PART I.C. Special Condition - Compliance Reporting

Rationale: Authorized by VPDES Permit Regulation, 9VAC25-31-190 J 4 and 220 I. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.

PART I.D. Other Requirements and Special Conditions

1. 95% Capacity Reopener

Rationale: Required by VPDES Permit Regulation, 9VAC25-31-200 B 4 for all POTW and PVOTW permits

2. Indirect Dischargers

Rationale: Required by VPDES Permit Regulation, 9VAC25-31-200 B 1 and B 2 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

3. CTC, CTO Requirement

Rationale: Required by the Code of Virginia § 62.1-44.19: Sewage Collection and Treatment Regulations, 9VAC25-790.

4. Operation and Maintenance Manual Requirement

Rationale: Required by the Code of Virginia § 62.1-44.19: Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190

5. Reliability Class

Rationale: Required by the Sewage Collection and Treatment Regulations, 9VAC25-790 for all municipal facilities.

6. Treatment Works Closure Plan

Rationale: This condition establishes the requirement to submit a closure plan for the treatment works if the treatment facility is being replaced or is expected close. This is necessary to ensure treatment works are properly closed so that the risk of untreated waste water discharge, spills, leaks, or other exposure to raw materials is eliminated and water quality is maintained. Section 62.1-44.21 requires every owner to furnish when requested plans, specifications, and other pertinent informations as may be necessary to determine the effect of the wastes from this discharge on the quality of state waters, or such other information as may be necessary to accomplish the purpose of the State Water Control Law.

7. Financial Assurance and Disclosure to Purchasers

Rationale: Required by Code of Virginia § 62.1-44.18:3 and the Board's Financial Assurance Regulation, 9 VAC 25-650-10 et seq

8. Public Sewerage

Rationale: DEQ strategy to minimize individual discharges and promote regionalization of wastewater treatment.

9. Section 303(d) List (TMDL) Reopener

Rationale: Section 303(d) of the Clean Water Act requires the total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it in compliance with any applicable TMDL approved for the receiving stream. The reopener recognizes that, according to Section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in the permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under Section 303 of the Act.

10. Sludge Reopener

Rationale: Required by VPDES Permit Regulation, 9VAC25-31-220 C for all permits issued to treatment works treating domestic sewage.

11. Sludge Use and Disposal

Rationale: VPDES Permit Regulation, 9VAC25-31-100 P; 220 B.2.; and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on sludge use and disposal practices and to meet specified standards for sludge use and disposal.

PART II, Conditions Applicable to All Permits

Rationale: VPDES Permit Regulation, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

21. Changes to Permit:

This permit has been drafted using guidance provided in the March 27, 2014 permit manual which is updated on a continual basis, resulting in minor changes to permit requirements and conditions.

PART I A.1. - 1/year E.coli monitoring was added to satisfy EPA mandate that requires E.coli monitoring in major and minor VPDES permits with an EPA approved TMDL which has a wasteload allocation for bacteria for that facility.

PART I C.1. - The quantification level (QL) for BOD₅ has been changed from 5 mg/l to 2 mg/l in accordance with recommendations from the Office of Water Permits and Standard Methods 22nd Edition.

The special condition for submittal of an operations and maintenance manual has been updated and does not require DEQ approval unless requested by DEQ.

In accordance with current agency policy to make the effective date of permits the first day of the month, the effective date of the reissued permit will be February 1, 2017 instead of the January 10, 2017 date based on the current expiration date. The existing permit is being administratively continued by DEQ to cover this gap.

PART II of the permit has been updated to comply with the March 27, 2014 updated permit manual as follows:

A.1.c - Added VELAP special condition which requires samples to be analyzed in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30-46, Accreditation for Commercial Environmental Laboratories per VPDES Permit Manual.

A.2. - Clarified that operational or process control samples or measurements do not need to follow procedures approved under Title 40 Code of Federal Regulations Part 136 or be analyzed in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30-46, Accreditation for Commercial Environmental Laboratories.

I.3. - Added language which allows for the Reporting of Non-Compliance activities to be submitted online in addition to reporting them by means of a telephone call.

22. Variances/Alternate Limits or Conditions: None

23. Regulation of Users: 9 VAC 25-31-280 B 9 - NA

24. Public Notice Information required by 9 VAC 25-31-280 B: **HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING:** DEQ accepts comments and requests for public hearing by hand delivery, e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all the persons represented by the commenter/requester. A request for a public hearing must also include; 1) The reason why a public hearing is requested.

2) A brief, informal statement regarding the nature and extent of the requester or of those represented by the requester, including how and

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to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit and suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION:

Name: Fred M. Wyatt

Address: DEQ, Southwest Regional Office, 355-A Deadmore Street,
Abingdon, VA 24210; Phone: (276) 676-4810 E-mail:

frederick.wyatt@deq.virginia.gov Fax: (276) 676-4899

25. Additional Comments:

Previous Board Action: None

Staff Comments:

Permit History: VPDES Permit No. VA0092045 was issued on January 10, 2007, was reissued on January 10, 2012, with an expiration date of January 9, 2017.

Permit Fee: A permit fee is not required. Only an annual maintenance fee is required, to be paid by October 1 of each year.

Threatened or Endangered Species: According to the attached printout from the Virginia Fish and Wildlife Information Service, no threatened or endangered species have been identified within a two mile radius of the discharge. This facility is not on the DEQ list for review by the DGIF, the Department of Conservation and Recreation (DCR) or the US Fish and Wildlife Service (USFWS), and the reissuance is not being coordinated with these agencies.

Financial Assurance: This treatment facility is a privately-owned sewerage system that discharges more than 1,000 gallons per day and less than 40,000 gallons per day. As required by the Code of Virginia § 62.1-44.18:3 and the Board's Financial Assurance Regulation, 9 VAC 25-650-10 et seq., the owner of such a facility must file with the Board a plan to abate, control, prevent, remove, or contain any substantial or imminent threat to public health or the environment that is reasonably likely to occur if such facility ceases operation. The owner has submitted and DEQ has approved the three required items:

- (1) Abatement, or closure plan.
- (2) Cost Estimate
- (3) Financial Assurance Mechanism.

Public Comments: None

26. TMDL: See Item # 13 above.

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PLANNING CONCURRENCE FOR MUNICIPAL VPDES PERMIT

PERMIT NO. VA0092045

FACILITY: Robinette Mobile Home Park STP

COUNTY: Wise

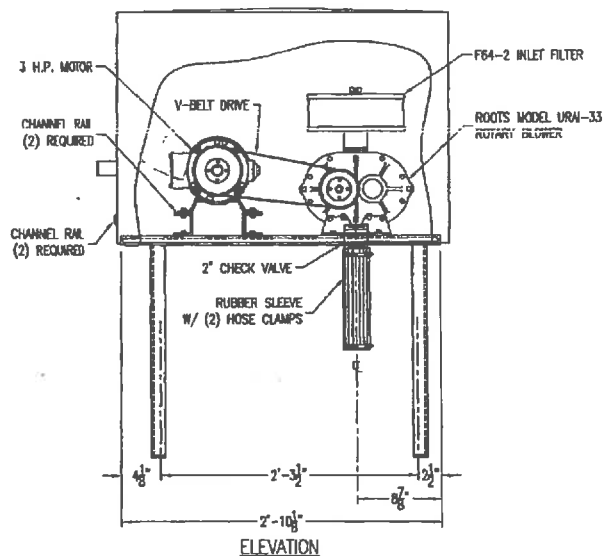
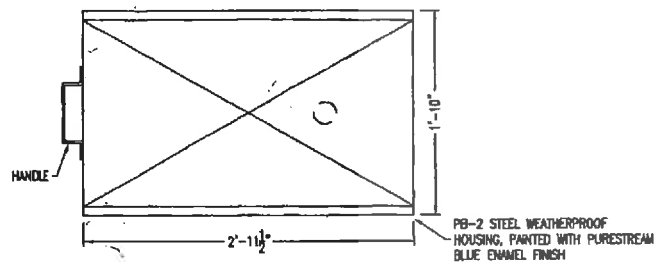
- [] 1. The discharge is in conformance with the existing planning documents for the area.
- [] 2. The discharge is not addressed in any planning document but will be included, if required, when the plan is updated.
- [] 3. Other

Environmental Manager

Date

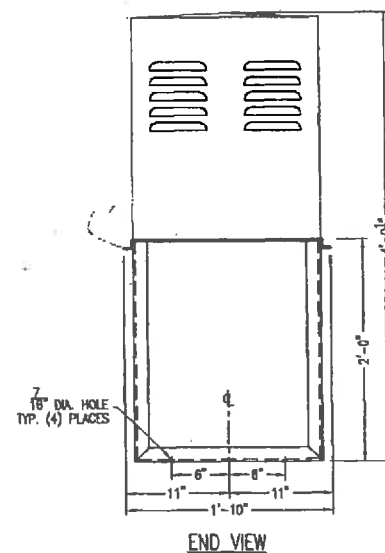
ATTACHMENT 1

Treatment Process Diagrams & Description

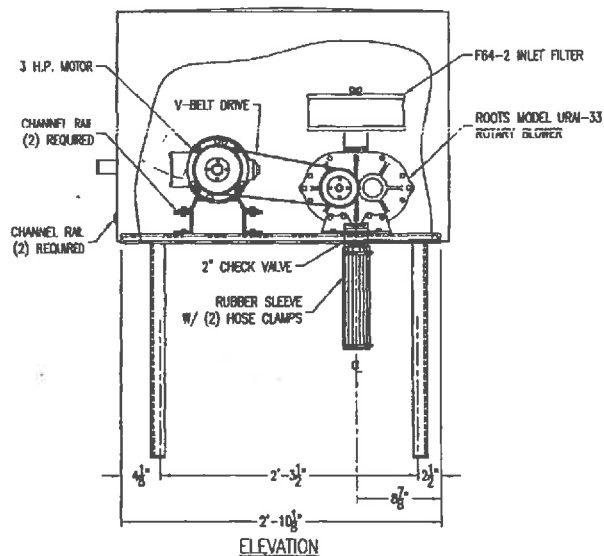
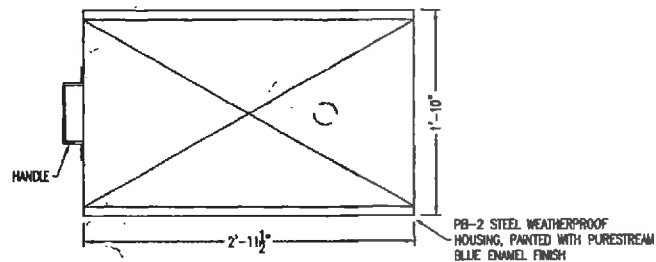


NOTES:

1. BLOWER, MOTOR, SHEAVES, BUSHINGS, V-BELT(S), INLET FILTER AND CHECK VALVE SHALL BE FACTORY INSTALLED. RUBBER SLEEVE W/ HOSE CLAMPS AND PRESSURE RELIEF VALVE SHALL BE SHIPPED LOOSE FOR FIELD INSTALLATION BY OTHERS.
2. ONE PRESSURE RELIEF VALVE SHALL BE PROVIDED FOR USE BY BOTH BLOWERS.

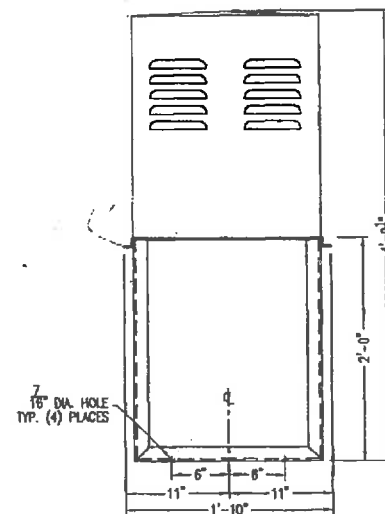


REVISIONS	JOB NO: Q1186		DESCRIPTION: PB-2 BLOWER MOTOR UNIT WITH HOUSING (2) REQUIRED, 54 CFM @ 5 PSI
	JOB NAME: BIG STONE GAP		
	LOCATION: BIG STONE GAP, VA	SCALE: 1/8"	DATE: 8/10/08
	DRAWN BY: ALG	CHECKED BY: C	PARTS DIV. NO.: Q1186B1



NOTES:

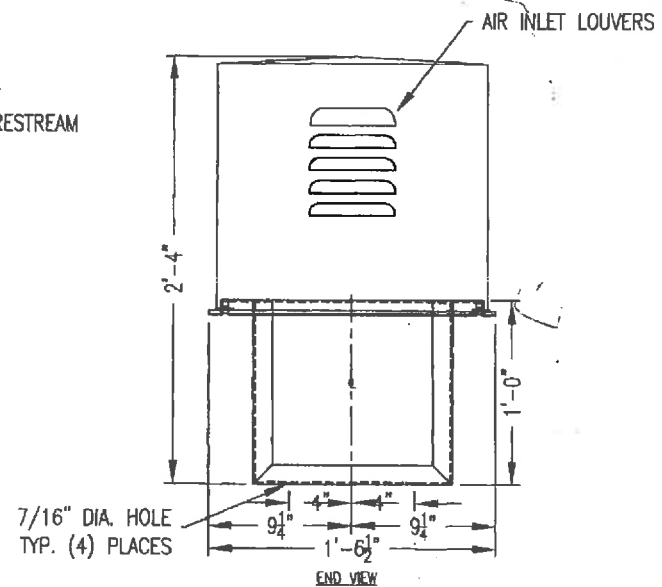
1. BLOWER, MOTOR, SHEAVES, BUSHINGS, V-BELT(S), INLET FILTER AND CHECK VALVE SHALL BE FACTORY INSTALLED. RUBBER SLEEVE W/ HOSE CLAMPS AND PRESSURE RELIEF VALVE SHALL BE SHIPPED LOOSE FOR FIELD INSTALLATION BY OTHERS.
2. ONE PRESSURE RELIEF VALVE SHALL BE PROVIDED FOR USE BY BOTH BLOWERS.




END VIEW

REVISIONS	JOB NO: Q1186	
	JOB NAME: BIG STONE GAP	
	LOCATION: BIG STONE GAP, VA	DESCRIPTION: PB-2 BLOWER MOTOR UNIT WITH HOUSING (2) REQUIRED, 54 CFM @ 5 PSI
DRAWN BY: JLC	DATE: 8/10/06	SCALE: 1/8"
		PARTS: C
		DWG. NO. Q1186B1

1. BLOWER, MOTOR, SHEAVES, BUSHINGS, V-BELT(S), INLET FILTER AND CHECK VALVE SHALL BE FACTORY INSTALLED. RUBBER SLEEVE W/ HOSE CLAMPS AND PRESSURE RELIEF VALVE SHALL BE SHIPPED LOOSE FOR FIELD INSTALLATION BY OTHERS.
2. ONE PRESSURE RELIEF VALVE SHALL BE PROVIDED.



REVISIONS	JOB NO: Q1186	 POPESTAPCO <small>INC.</small>	
	JOB NAME: BIG STONE GAP		
	LOCATION: BIG STONE GAP, VA		
	DRAWN BY: RJC	DATE: 8/10/06	DESCRIPTION
			PB-1 BLOWER MOTOR UNIT WITH HOUSING (1) REQUIRED, 20 CFM @ 5 PSI
			SCALE: 8 DRG. SIZE: B PARTS DRG. NO. Q1186B3

ATTACHMENT 2
Discharge Location

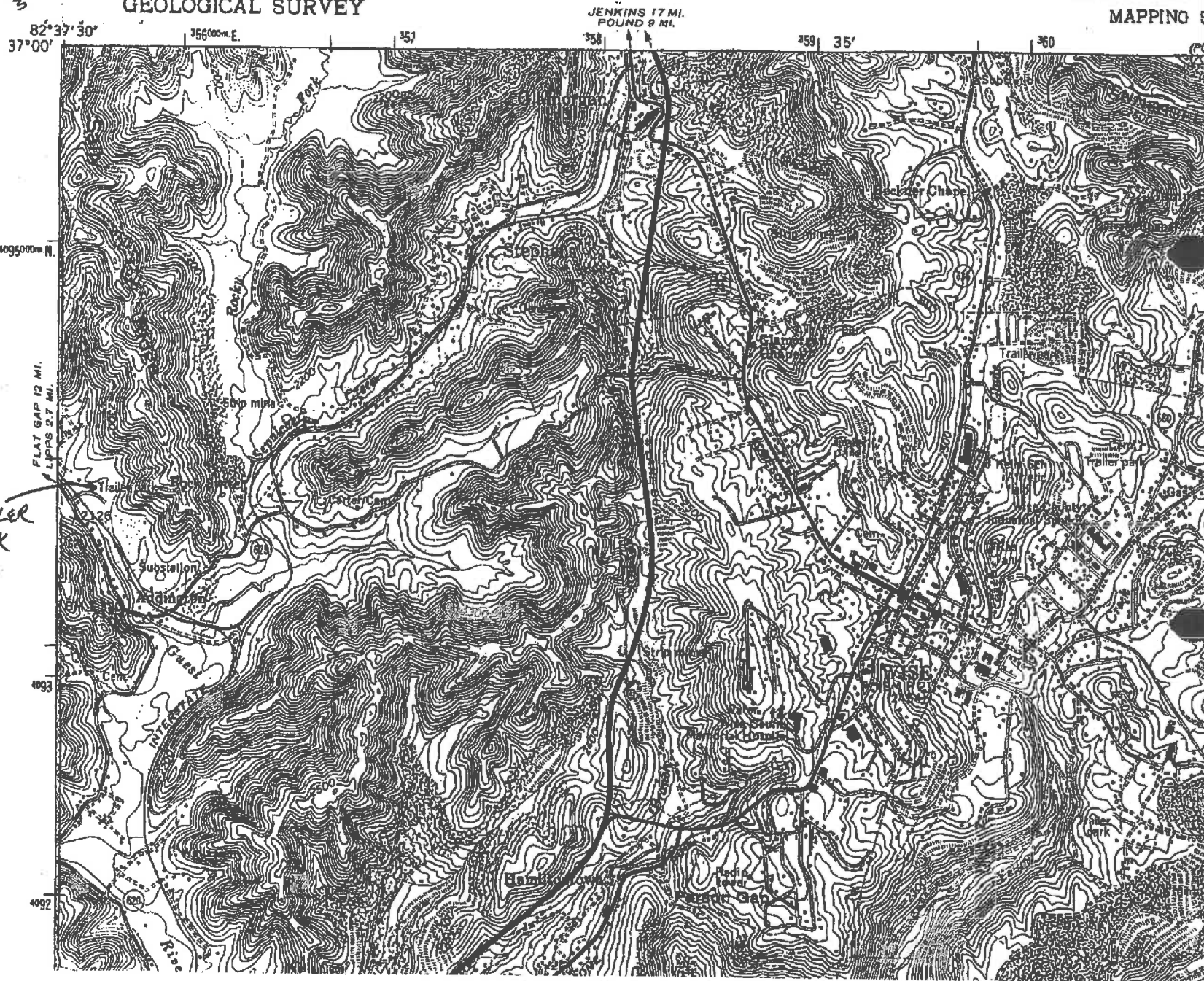
4458 II SW
FLAT GAP 186-SW

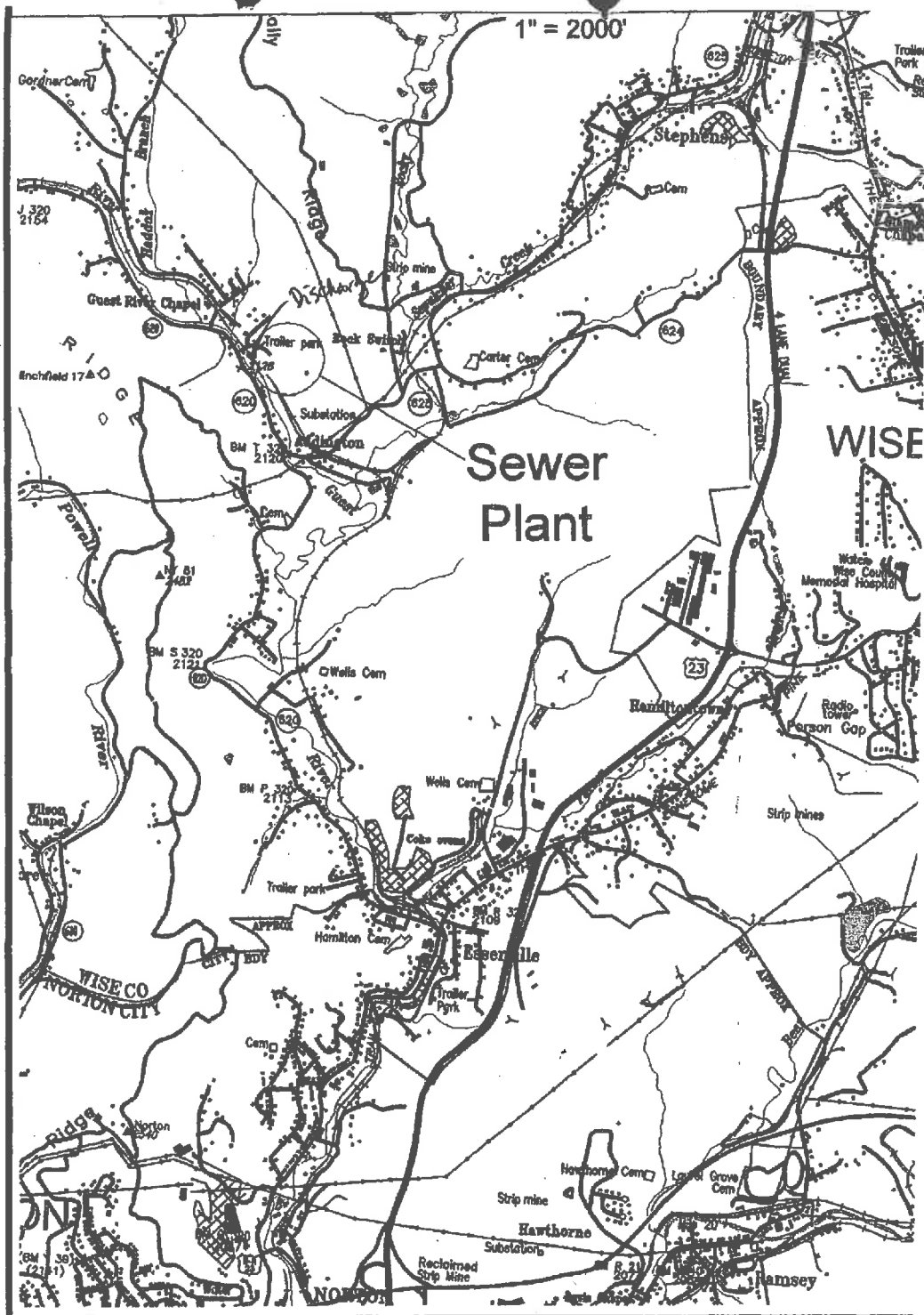
TRAILER
PARK

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WISE QUAD

UNIT
TENNESSEE
MAPPING 8





ATTACHMENT 3

Permit Limitations Development

Attachment 3

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY

Office of Water Quality Assessments

629 East Main Street P.O. Box 10009 Richmond, Virginia 23219

SUBJECT: Flow Frequency Determination
Coeburn-Norton Wise Regional WWTP - #VA0077828

RECEIVED

TO:

~~Clarence Carter, Sr.~~

DEC 15 1998

FROM: Paul E. Herman, P.E., WQAP

Paul E. Herman

DEQ-SWRO

DATE: December 11, 1998

COPIES: Ron Gregory, Charles Martin, File

This memo supersedes my April 23, 1993 memo to you concerning the subject VPDES permit.

The Coeburn-Norton-Wise Regional WWTP discharges to the Guest River near Coeburn, Virginia. Flow frequencies are required at this site for use by the permit writer in developing the VPDES permit.

The USGS operated a continuous record gage in the Guest River near Coeburn, VA (#03524500) from 1949 to 1959 and from 1978 to 1981. The gage was located approximately 2.0 miles downstream of the discharge point, at the Route 72 bridge, in Wise County, VA. The flow frequencies for the discharge point were determined using drainage area proportions and do not address any withdrawals, discharges, or springs which may lie between the gage and the outfall. The flow frequencies for the gage and the discharge point are presented below.:

Guest River near Coeburn, VA (#03524500):

Drainage Area = 87.3 mi²

1Q10 = 1.8 cfs = 1.16 MGD High Flow 1Q10 = 7.2 cfs = 4.65 MGD
7Q10 = 2.1 cfs = 1.36 MGD High Flow 7Q10 = 8.3 cfs = 5.37 MGD
30Q5 = 4.1 cfs HM = 21 cfs
30Q10 = 2.7 cfs = 1.74 MGD High Flow 30Q10 = 21 cfs = 13.57 MGD

Guest River at discharge point:

Drainage Area = 85.1 mi²

1Q10 = 1.75 cfs 1.13 (MGD) High Flow 1Q10 = 7.02 cfs 4.54
7Q10 = 2.05 cfs 1.33 High Flow 7Q10 = 8.09 cfs 5.23
30Q5 = 4.00 cfs 2.59 HM = 20.1 cfs 12.99
30Q10 = 1.7 MGD High Flow 30Q10 = 13.23 MGD

The high flow months are December through May

If you have any questions concerning this analysis, please let me know.

Guest River

Drainage Area at Confluence with Sepulcher Creek = 8.93 mi^2

$$1Q_{10} = 1.13 \times \frac{8.93}{85.1} = 0.12 \text{ MGD}$$

$$\text{HF } 1Q_{10} = 4.54 \times \frac{8.93}{85.1} = 0.48 \text{ MGD}$$

$$7Q_{10} = 1.33 \times \frac{8.93}{85.1} = 0.14 \text{ MGD}$$

$$\text{HF } 7Q_{10} = 5.23 \times \frac{8.93}{85.1} = 0.55 \text{ MGD}$$

$$30 Q_{10} = 1.7 \times \frac{8.93}{85.1} = 0.18 \text{ MGD}$$

$$\text{HF } 30Q_{10} = 13.23 \times \frac{8.93}{85.1} = 1.39 \text{ MGD}$$

$$\text{Stream slope} = 0.0014 \text{ ft/ft.}$$

Water Site Code: W-SEA06BCE06-55-21

Collection Date/Time	Item	Calcus	Field pH	DO	Probe Conductivity
08/20/2005 11:55		19.00	7.98	8.45	1134.00
10/21/2005 12:10		12.60	8.03	9.44	1213.00
12/18/2005 11:20		3.30	7.70	12.03	710.00
02/09/2006 11:15		3.10	7.35	12.66	480.00
04/06/2006 11:15		8.10	7.67	11.05	725.00
06/23/2006 10:40		19.40	7.77	7.91	800.00
08/09/2006 10:30		15.25	8.18	8.53	1106.00
10/18/2006 11:15		10.03	8.06	10.02	987.00
12/20/2006 11:10		16	8.06	13.07	778.00
02/09/2007 11:05		7.74	7.97	10.61	734.00
04/26/2007 11:40		10.33	7.81	10.88	525.90
06/21/2007 11:00		15.79	8.22	9.12	1045.00

CALCULATION OF TOTAL AMMONIA NITROGEN LIMITS

FACILITY: Robynette Trailer Court

NH₃ limits are derived from the ammonia tables or formulas in the Water Quality Standards. Human health criteria are not applicable for ammonia.

The following stream parameter values are being used for the calculations:

Dry Season pH = <u>8.0</u>	} Assumed but is in line with Street data	Dry Season Temperature = <u>24</u>	} Assumed due to lack of long term data.
Wet Season pH = <u>8.0</u>		Wet Season Temperature = <u>14</u>	

The derived ammonia nitrogen water quality criteria are:

Acute: AC _{dry} = <u>8.4</u>	AC _{wet} = <u>8.4</u>
Chronic: CC _{dry} = <u>1.32</u>	CC _{wet} = <u>2.43</u>

The following flows apply:

Q _e	= Design Flow of STP (MGD)	= <u>0.01</u>
Q _{S-1}	= 1Q10 Streamflow (MGD)	= <u>0.12</u>
Q _{S-1w}	= HF 1Q10 Streamflow (MGD)	= <u>0.48</u>
Q _{S-30}	= 30Q10 Streamflow (MGD)	= <u>0.18</u>
Q _{S-30w}	= HF 30Q10 Streamflow (MGD)	= <u>1.39</u>

The water quality wasteload allocations are calculated as follows, assuming assuming a background concentration of 0;

f = fraction of stream flow to use from MIX Program

$$\text{Dry WLA} = [\text{AC}_{\text{dry}}((f)Q_{S-1} + Q_e) - (f)(Q_{S-1})(\text{NH}_3\text{-N background})] / Q_e = 8.4(0.12 + 0.01) / (0.01) = 109 \text{ mg/l}$$

$$\text{Wet WLA} = [\text{AC}_{\text{wet}}((f)Q_{S-1w} + Q_e) - (f)(Q_{S-1w})(\text{NH}_3\text{-N background})] / Q_e = 8.4(0.48 + 0.01) / (0.01) = 412 \text{ mg/l}$$

$$\text{Dry WLA} = [\text{CC}_{\text{dry}}((f)Q_{S-30} + Q_e) - (f)(Q_{S-30})(\text{NH}_3\text{-N background})] / Q_e = 1.32(0.18 + 0.01) / (0.01) = 25 \text{ mg/l}$$

$$\text{Wet WLA} = [\text{CC}_{\text{wet}}((f)Q_{S-30w} + Q_e) - (f)(Q_{S-30w})(\text{NH}_3\text{-N background})] / Q_e = 2.43(1.39 + 0.01) / (0.01) = 340 \text{ mg/l}$$

As indicated by these wasteload allocations, no effluent limitations are needed for ammonia nitrogen.

MODEL FILE AND STREAM INSPECTION REPORT FORM

Page 1

Discharge Name: Trailer Court - Robinette
 Location: State Route 620, at Addington, North of Essexville
 Model File Path/Name: _____
 Inspection Date: 10/05/2006 Modeler: F. M. Wyatt

General Stream Information:

Stream Name: Guest River
 Basin: Tennessee - Big Sand River Section: 2 Class: IV Special Standards: None
 Are the standards for this stream violated due to natural causes? (Y/N) _____
 Is the stream correctly classified? (Y/N) N
 If "N", what is the correct classification? _____

Model Segmentation:

Number of segments to be modeled: 1

Flow Gauge / Flow Frequency Information (Attach Copy):

Gauge Used: Guest River Near Coeburn
 Drainage Area/Observed Flow At The Gauge: 87.3 sq. mi./mgd
 Drainage Area/Observed Flow At The Start of The Model: 8.93 sq. mi./mgd
 7Q10 of the Gauge: 1.36 mgd
 Flow Adjustment for Springs or Dischargers: _____ mgd

Background Water Quality:

Elevation at the Start of the model: 2122 ft above mean sea level
 Elevation at the End of the model: 2100 ft above mean sea level
 Critical Temperature: 24 °C (attach data and analysis)
 Ambient Monitoring Gauge Used: Guest River Near Coeburn

Additional Discharges Information:

Is there a discharger within 3 miles upstream of the proposed discharge? (Y/N) N
 Does antidegradation apply to this analysis? (Y/N) N If so, which segment(s)? _____
 Is any segment on the current 303(d) list for D.O. violations? (Y/N) N
 Is any segment of the model within an approved D.O. TMDL segment? (Y/N) N
 Is any discharge to the model intermittent? (Y/N) N
 Any dams in stream section being modeled? (Y/N) N

Notes/Sketch:

MODEL FILE AND STREAM INSPECTION REPORT FORM
Page 2

(Fill In This Page FOR EACH SEGMENT To Be Modeled)

Segment Number:		
Reason for Defining Segment:	Discharge at Beginning of Segment	<input checked="" type="checkbox"/>
	Physical Change at Beginning of Segment	
	Tributary at Beginning of Segment	
Length of Segment (mi.):		3.0
Drainage Area at Start of Segment (sq. mi.):		8.93
Drainage Area at End of Segment (sq. mi.):		12.0
Elevation at Start of Segment (ft.):		2122
Elevation at End of Segment (ft.):		2100
If Discharge or Tributary At Beginning of Segment, Complete the Following:		
Discharge/Tributary Name:		Trailer Court
Discharge/Tributary Temperature (C): (If different from background ambient)		24
Critical Discharge/Tributary Flow (mgd): (Design/Permitted Flow or 7Q10 Condition) (use permitted or design flow for discharges, 7Q10 flow from flow frequency analysis for tributaries)		0.01 MGD
For Dischargers Only: (use permitted Concentrations)	CBOD ₅ (mg/l):	2.5
	TKN (mg/l):	20
	D.O. (mg/l):	6.0
General Type of Cross Section in Segment: (7Q10 Condition)		
Rectangular <input checked="" type="checkbox"/> Triangular <input type="checkbox"/> Deep Narrow U <input type="checkbox"/> Wide Shallow Arc <input type="checkbox"/> Irregular <input type="checkbox"/> No Defined Channel <input type="checkbox"/>		
General Channel Characteristics of Segment: (7Q10 Condition)		
Mostly Straight <input type="checkbox"/> Moderately Meandering <input checked="" type="checkbox"/> Severely Meandering <input type="checkbox"/> No Defined Channel <input type="checkbox"/>		
Does the stream have a pool and riffle character (Y/N)? (7Q10 Condition)		
If "Y":	% of length that is pools 50	Average depth of pools (ft) 1
	% of length that is riffles 50	Average depth of riffles (ft) 1
Bottom:	Sand <input type="checkbox"/> Silt <input type="checkbox"/> Gravel <input type="checkbox"/> Small Rock <input checked="" type="checkbox"/> Large Rock <input type="checkbox"/> Boulders <input type="checkbox"/>	
Sludge Deposits:	None <input checked="" type="checkbox"/> Trace <input type="checkbox"/> Light <input type="checkbox"/> Heavy <input type="checkbox"/>	
Plants:	Rooted: None <input checked="" type="checkbox"/> Few <input type="checkbox"/> Light <input type="checkbox"/> Heavy <input type="checkbox"/>	
	Algae: None <input type="checkbox"/> Film on Edges Only <input type="checkbox"/> Film on Entire Bottom <input type="checkbox"/>	
Projected 7Q10 Width of Segment (ft): (must be projected by modeler based on site visit)		10
Projected 7Q10 Depth of Segment (ft): (can be calculated by model based on width)		0.2
Projected 7Q10 Velocity of Segment (ft): (can be calculated by model based on width)		0.2
Does the water have an evident green color? (Y/N)		N

modout
"Model Run For C:\ABGDN\FREDWORK\Trailer Ct.mod On 10/12/2005 10:46:03 AM"

"Model is for GUEST RIVER."
"Model starts at the TRAILER COURT discharge."

"Background Data"

"Flow"	"CBOD5"	"TKN"	"DO"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
.1391,	2,	0,	7.06,	24

"Discharge/Tributary Input Data for Segment 1"

"Flow"	"CBOD5"	"TKN"	"DO"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
.01,	25,	23,	6,	20

30 mg/l BOD5 NH3-N - NL
"Hydraulic Information for Segment 1"

"Length"	"width"	"Depth"	"velocity"
"(mi)"	"(ft)"	"(ft)"	"(ft/sec)"
3,	10,	.176,	.131

"Initial Mix Values for Segment 1"

"Flow"	"DO"	"CBOD"	"nBOD"	"DOSat"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
.1491,	6.989,	8.856,	5.808,	7.883,	23.73175

"Rate Constants for Segment 1. - (All units Per Day)"

"k1"	"k1@T"	"k2"	"k2@T"	"kn"	"kn@T"	"BD"	"BD@T"
.8,	.95,	4.4,	4.807,	.4,	.533,	0,	0

"Output for Segment 1"

"Segment starts at TRAILER COURT"

"Total"	"Segm."	"DO"	"CBOD"	"nBOD"
"Dist."	"Dist."	"(mg/l)"	"(mg/l)"	"(mg/l)"
"(mi)"	"(mi)"			
0,	0,	6.989,	8.856,	5.808
.1,	.1,	6.697,	8.472,	5.665
.2,	.2,	6.482,	8.105,	5.526
.3,	.3,	6.328,	7.754,	5.39
.4,	.4,	6.221,	7.418,	5.258
.5,	.5,	6.152,	7.097,	5.129
.6,	.6,	6.112,	6.789,	5.003
.7,	.7,	6.094,	6.495,	4.88
.8,	.8,	6.094,	6.214,	4.76
.9,	.9,	6.108,	5.945,	4.643
1,	1,	6.132,	5.687,	4.529
1.1,	1.1,	6.164,	5.441,	4.418
1.2,	1.2,	6.201,	5.205,	4.309
1.3,	1.3,	6.242,	5,	4.203
1.4,	1.4,	6.479,	5,	4.1
1.5,	1.5,	6.671,	5,	3.999
1.6,	1.6,	6.827,	5,	3.901
1.7,	1.7,	6.953,	5,	3.805
1.8,	1.8,	7.056,	5,	3.712
1.9,	1.9,	7.095,	5,	3.621
2,	2,	7.095,	5,	3.532
2.1,	2.1,	7.095,	5,	3.445
2.2,	2.2,	7.095,	5,	3.36
2.3,	2.3,	7.095,	5,	3.277
2.4,	2.4,	7.095,	5,	3.197
2.5,	2.5,	7.095,	5,	3.118
2.6,	2.6,	7.095,	5,	3.041
2.7,	2.7,	7.095,	5,	2.966
2.8,	2.8,	7.095,	5,	2.893

2.9,	2.9,	7.095,	5,	modout
3,	3,	7.095,	5,	2.822
				2.753

"END OF FILE"

Mixing Zone Predictions for Trailer Court

Effluent Flow = 0.010 MGD
Stream 7Q10 = 0.14 MGD
Stream 1Q10 = 0.12 MGD
Stream slope = 0.0014 ft/ft
Stream width = 10 ft
Bottom scale = 3
Channel scale = 2

Mixing Zone Predictions @ 7Q10

Depth = .1592 ft
Length = 288.32 ft
Velocity = .1458ft/sec
Residence Time = .0229days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = .146 ft
Length = 310.4 ft
Velocity = .1378ft/sec
Residence Time = .6255 hours

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.

Calculation of Total Residual Chlorine

Facility Name: Robinette Mobile Home Park WWT

Assuming a background value of 0 and Tier II waters:

ACUTE

$$WQ-WLA = (A_{o2}) \frac{(Qs-1_{dry} + Q_e)}{Q_e}$$

$$WQ-WLA_{ed} = (0.019) \frac{(0.12 + 0.01)/0.01}{0.25} = 0.25 \text{ mg/l}$$

CHRONIC

$$AWLA_{cd} = (C_{o2}) \frac{(Qs-7_{dry} + Q_e)}{Q_e}$$

$$AWLA_{cd} = (0.011) \frac{(0.14 + 0.01)/0.01}{0.17} = 0.17 \text{ mg/l}$$

The effluent limitations were calculated using the DQ's Version 2.0.4 Mixing Program. See attached computer printout.

9/6/2006 11:06:20 AM

Facility = Robinette Mobile Home Park WWTP

Chemical = Total Residual Chlorine

Chronic averaging period = 4

WLAa = 0.25

WLAc = 0.17

Q.L. = 0.1

samples/mo. = 30

samples/wk. = 8

Summary of Statistics:

observations = 1

Expected Value = 1

Variance = .36

C.V. = 0.6

97th percentile daily values = 2.43341

97th percentile 4 day average = 1.66379

97th percentile 30 day average = 1.20605

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity

Maximum Daily Limit = 0.248637713289049

Average Weekly limit = 0.148313660524016 ≈ 0.14 mg/l

Average Monthly Limit = 0.123230112841717 ≈ 0.12 mg/l

The data are:

ATTACHMENT 4
303 (d) Fact Sheets
TMDL



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

3 2007

FEB 08 2007

Mr. Charles Martin
Virginia Department of Environmental Quality
629 Main Street
Richmond, VA 23219

Dear Mr. Martin:

The United States Environmental Protection Agency has reviewed your request to amend the waste load allocation (WLA) for the Guest River Aquatic Life Use total maximum daily load (TMDL). The Commonwealth has issued permit number VA0092045 to the Robinette Mobile Home Park. The facility has a design flow of 10,000 gallons per day with a total suspended solids concentration of 30 mg/l. The facility will provide an environmental benefit by replacing the failed septic systems that currently service the mobile home park. Raw sewage from these failed systems is visibly pooling on the ground and is transported directly to the Guest River via overland flow. This facility was not included in the original TMDL and requires a WLA of 0.402 tons per year or 2.19 lbs/day. This loading is less than one percent (0.00417 percent) of the total TMDL load (9,636 tons/year) and was therefore considered insignificant. EPA does not disagree with DEQ's position or object to the TMDL modification. If you have any questions or comments concerning this letter, please don't hesitate to contact Mr. Peter Gold at (215) 814-5236.

Sincerely,

A handwritten signature in black ink that reads "Thomas Henry".

Thomas Henry, Manager
TMDL Program





COMMONWEALTH of VIRGINIA

L. Preston Bryant, Jr.
Secretary of Natural Resources

DEPARTMENT OF ENVIRONMENTAL QUALITY
Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P. O. Box 10009, Richmond, Virginia 23240
Fax (804) 698-4500 TDD (804) 698-4021
www.deq.virginia.gov

David K. Paylor
Director

(804) 698-4000
1-800-592-5462

November 16, 2006

Pete Gold
U.S. EPA Region III – 3WP12
1650 Arch Street
Philadelphia, PA 19103-2029

RE: Modification of TMDL for Guest River, Wise County, Virginia

Dear Mr. Gold:

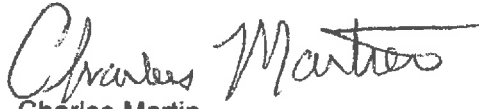
On November 13, 2003, your office approved a TMDL for sediment loading for a 27.65 mile segment of Guest River, from its headwaters to the confluence with Bad Branch (river mile 7.10). This letter is a proposed modification of this TMDL to add the new WLA described below.

A key element of the implementation plan for this TMDL is reduction of nonpoint source loads. As part of the TMDL implementation effort, we are proposing to eliminate a nonpoint load from an existing 6 unit mobile home park. The mobile home park is presently served by individual septic tank systems which have completely failed with raw sewage visibly pooling on the ground. Since the entire trailer park slopes down to the Guest River, which forms the lower perimeter of the property line, the raw sewerage currently acts as a significant transport of TSS to the impaired stream.

To eliminate these failing septic systems, we are proposing to issue a VPDES Permit (No. VA0092045) for a package wastewater treatment plant (WWTP) which will discharge into the Guest River. The ultimate capacity of the mobile Home Park is 33 units and the design flow of the proposed WWTP is 10,000 gpd. With secondary treatment limits for BOD₅ and TSS (30/30 mg/l monthly average), the sediment waste load allocation (WLA) for this facility is calculated as 1.1 kg/l or 0.402 tons/year. This is less than 1% of the TMDL (9,636 tons / year) and is considered insignificant. The public notice for the issuance of this permit includes the proposed addition of the WLA to the TMDL. We will send you the comments and agency response(s) resulting from the notice. Upon completion of the public outreach process, we will adopt this WLA in the TMDL part of Virginia's Water Quality Management Planning regulation.

If you or your staff have questions on the modification of the Guest River sediment TMDL, please contact me at (804)698-4462.

Sincerely,

A handwritten signature in cursive script that reads "Charles Martin". The signature is written in dark ink and is positioned above the printed name.

Charles Martin

Environmental Program Manager

cc: Allen Newman, P.E. VADEQ-SWRO
Jutta Schneider VADEQ-CO
Kyle Winter VADEQ-CO

EXECUTIVE SUMMARY

In 1998, the Virginia Department of Environmental Quality (VADEQ) listed Guest River mainstem, from its headwaters to confluence with Bad Branch, as impaired for violations of the general water quality standard, i.e. for failure to support the aquatic life use. Section 303(d) of the Clean Water Act and Environmental Protection Agency (EPA) Water Quality Planning and Management Regulations (40 CFR Part 130) require states to develop Total Maximum Daily Loads for waterbodies which do not meet water quality standards.

The Guest River impairment was identified through benthic macroinvertebrates surveys. Biological monitoring indicated that aquatic life uses were impaired. This is a violation of the general water quality criteria. This standard, (9 VAC 25-260-20 A), states that *"All state waters, including wetlands, shall be free from substances attributable to sewage, industrial waste, or other waste in concentrations, amounts, or combinations which contravene established standards or interfere directly or indirectly with designated uses of such water or which are inimical or harmful to human, animal, plant, or aquatic life."*

In 2001, VADEQ contracted with Tennessee Valley Authority (TVA) to develop a sediment and nutrient loading estimate model for the Guest River. As part of the contract, TVA took infrared aerial photographs of the watershed and transferred the photo-interpretations of land use and land cover to digital format. The land use and land cover data were combined with a pollutant loading model to estimate sediment loadings in terms of tons per acre per year. The underlying equations for the model, the Integrated Pollutant Source Identification (IPSI) tools, are the Universal Soil Loss Equation and the EPA equation for Urban land uses based on a 1990 report, *Urban Targeting and BMP Selection*. Results of the water quality data indicated that total suspended solids were the parameter of interest.

The TVA's IPSI tools allowed predicted estimates of yearly total suspended loads based on reductions in soil losses. The target loading endpoint chosen mimics the loading in non-impacted sub-watersheds within the basin. The argument is that if estimated loads of total suspended solids have no impact on the benthic macroinvertebrates in these sub-watersheds, then the same loading in the mainstem of Guest River should allow recovery of impacted populations.

Reduction of sediment loadings requires installation of best management practices in the watershed to reduce erosion from the contributing sources. The main sources of sediments are abandoned mine features, urban sources, pastures, and stream bank erosion. The following describes two phases of reduction strategies, which result in achieving the total suspended solids endpoint.

An interim load reduction scenario includes repair of all abandoned mine features, full cover on 50% of previously mined lands, 50% of overgrazed pasture improved to fair and 50% of fair pasture converted to good, 10% reduction of urban sources and 25% reduction of disturbed areas delivery to the streams, repair of 33% of eroding perennial stream banks and reduction of road bank erosion by 20%.

The final load reduction scenario includes repair of all abandoned mine features, 100% of all previously mined land improved, all overgrazed pasture improved to fair and all fair pasture improved to good, half of eroding stream banks repaired, 50% reduction of erosion from unpaved roads and road cuts, 50% runoff from urban sources, reduce delivery from clear-cuts by 25%, from disturbed areas by 70%, and scrub/shrub areas improved to 100% cover, and Sepulcher Creek tipple delivery reduced by 90%. The TMDL is defined as follows:

Table ES-1. Guest River Sediment TMDL (tons/year)

TMDL	WLA	LA	MOS
9,635.63	317.52	9,318.11	implicit

CHAPTER 3

3.0 SOURCE ASSESSMENT

In-stream sediment loads in the Guest River are generated by nonpoint sources such as surface runoff from both pervious and impervious areas as well as channel and road bank erosion, and by point sources (i.e. permitted discharges). Section 3.1. below discusses the permitted discharges in the watershed. In order to identify nonpoint sources of sediment, VADEQ contracted TVA to develop a pollutant loading model based on aerial photography of the watershed. Using photo interpretation methods, TVA staff identified land use categories and then catalogued the number of acres of each land use within the watershed. Based on the land use catalogue, the Universal Soil Loss equation was used to calculate a load, in tons per acre per year, from the watershed. The *Guest River Watershed Nonpoint Source Pollution Inventory and Pollutant Load Estimates* document, prepared by Tennessee Valley Authority (TVA IPSI model), is included as Appendix D. Section 3.2 provides a summary of the nonpoint sources identified through this process.

3.1 Point Sources

DEQ issues Virginia Pollution Discharge Elimination System (VPDES) permits for entities that collect and treat sanitary sewerage and then discharge the treated wastewater to state waters. Since treated wastewater delivery to the stream is usually in a pipe, these are the point sources. The quantity and source of the wastewater determine permit categories. Public sewerage treatment facilities that discharge over one million gallons of treated wastewater each day (mgd) are the major municipal sources. Minor municipal permits are public sewerage treatment facilities that discharge less than one million gallons of treated wastewater each day. Industrial wastewater is a second source. Facilities that discharge industrial wastewater also require permits. Major and minor industrial sources have the same quantity ranges as the municipal sources, that is, a facility discharging one mgd or more is a major source and discharging less than one mgd is minor industrial source. Small family or entity treatment facilities that discharge no more than 1000 gallons each day receive general permits. There is one major municipal source within the watershed, three minor municipal sources and two minor industrial sources. Thirty-five small family home general permit discharges are located here. There are two stormwater permits associated with coal tipples in the Guest River. Table 3.1 lists the discharge permits within the Guest River watershed sorted by the stream to which they discharge.

Table 3.1. VADEQ Permitted Dischargers

Permit No	Receiving Stream	River Mile Location	Maximum Flow (Gallons Per Day)	TSS Concentration Weekly Average (milligrams per liter)	TSS Concentration Monthly Average (milligrams per liter)	TSS Permitted Load (Tons/Yr)
VA0023477	Bad Branch, UT	6BBAS001.08	30,000	45	30	1.4
VA0092045	Guest River	6BGUE027.03	10,000	45	30	0.40
VAG400020	Bear Ck.	6BBER003.84	1,000	45	30	0.046
VA0030112	Bear Ck., UT	6BXA4000.66	21,800		30	1.00
VAG400060	Bear Ck., UT	6BXCD000.84	1,000	45	30	0.046
VAG400218	Bear Ck., UT	6BXDD000.38	1,000		30	0.046
VAG400234	Bear Ck., UT		1,000		30	0.046
VA0077828	Guest River	6BGUE007.56	4,000,000	45	30	182.70
VAG400265	Guest River	6BGUE025.09	1,000		30	0.046
VAG400266	Guest River	6BGUE025.01	1,000		30	0.046
VAR050097	Guest River		Stormwater	N/A	N/A	0.15
VAR050105	Guest River		Stormwater	N/A	N/A	0.11
VAG400110	Guest River, UT		1,000		30	0.046
VAG400292	Guest River, UT	6BXCD000.38	1,000		30	0.046
VAG400293	Guest River, UT	6BXDC000.38	1,000		30	0.046
VAG400320	Guest River, UT	6BXCF000.25	1,000		30	0.046
VAG400322	Guest River, UT	6BXCE000.48	1,000		30	0.046
VAG400305	Little Toms Ck.	6BLTF003.76	1,000		30	0.046
VAG400357	Little Toms Ck., UT	6BXDK000.11	1,000		30	0.046
VAG400362	Little Toms Ck., UT	6BXDN000.31	1,000		30	0.046
VAG400318	Parsons Br., UT	6BXCB000.30	1,000		30	0.046
VAG400369	Pine Branch	6BPNB000.33	1,000		30	0.046
VAG400252	Pole Bridge Br., UT	6AXAU000.17	1,000		30	0.046
VAG400267	Sepulcher Ck.	6BSEP000.99	1,000		30	0.046
VAG400289	Sepulcher Ck.	6BSEP002.39	1,000		30	0.046
VAG400348	Sepulcher Ck., UT	6BXDH000.31	1,000		30	0.046
VAG400255	Shade Branch, UT	6BXCH000.03	1,000		30	0.046
VA0052388	Toms Ck.	6BTMS005.40	60,000		30	2.74
VAG400197	Toms Ck.	6BTMS003.00	1,000		30	0.046
VAG400246	Toms Ck.	6BTMS002.21	1,000		30	0.046
VAG400247	Toms Ck.	6BXCI000.60	1,000		30	0.046
VAG400300	Toms Ck.	6BLTF002.43	1,000		30	0.046
VAG400294	Toms Ck., UT	6BXCI000.84	1,000		30	0.046
VAG400390	Toms Ck., UT	6BXCI000.86	1,000		30	0.046
VAG400393	Toms Ck., UT	6BXCI000.59	1,000		30	0.046
VAG400019	Yellow Ck.		1,000		30	0.046
VAG400091	Yellow Ck.	6BYLO003.35	1,000		30	0.046
VAG400224	Yellow Ck.	6BYLO003.40	1,000		30	0.046
VAG400229	Yellow Ck.	6BYLO003.23	1,000		30	0.046
VAG400394	Yellow Ck.	6BYLO003.33	1,000		30	0.046
VAG400052	Yellow Ck., UT	6BXDB000.32	1,000		30	0.046
VAG400260	Yellow Ck., UT	6BXCC000.55	1,000		30	0.046
TOTAL						190.12

4.3 TMDL Scenario

The TMDL, or allowable load, of 9,635.63 tons/year was set as the watershed-based unit area load for Burns Creek (0.15 tons/acre/yr) multiplied by the Guest River watershed area (64,237.5 acres). Retaining the permitted dischargers at their permitted loads of 317.92 tons/year results in an allowable nonpoint source load of 9,317.97 tons/year. Various management scenarios were tested through IPSI to reach this target for the watershed, with the resulting TMDL scenario below. The TMDL reduction scenario is represented graphically in Appendix C.

Using the IPSI model, a TMDL scenario (IPSI Scenario 1) was developed based on the following management actions derived from stakeholder input :

- * Repair all abandoned mine features,
- * Full cover on 100% of previously mined land,
- * 90% reduction of sediment delivery from tipples in Sepulcher Creek,
- * 100% overgrazed pasture improved to fair, 75% of fair pasture improved to good,
- * Reduce residential urban sources by 60%, all other urban sources by 50%, disturbed areas by 70% and road bank erosion by 50%,
- * Repair 1/2 of eroding stream banks,
- * Reduce clearcut area load by 25% and improve shrub/scrub areas to 100% cover.

Table 4.2. Guest River TMDL TSS Allocations

Land Use Category	Existing TSS load (tons/year)	% reduction	TMDL TSS allocations (tons/year)
Urban Land ¹	4,666.6	56%	2,038.10
Cropland	7.3	0%	7.30
Pastureland	1,641.9	60%	662.48
Forest Land ²	4,535.7	2%	4,447.06
Active Strip Mine ³	17.8	0%	17.80
Tipples	1,323.1	90%	134.15
Previously Mined Land	5,181.8	77%	1,199.95
Abandoned Mine Features ⁴	1,943.8	100%	0.0
Disturbed Areas	781.8	70%	234.53
Stream Banks ⁴	331.1	50%	165.57
Livestock Access Areas ⁴	8.3	0%	8.28
Unimproved Roads ⁴	802.2	50%	401.16
Total NPS Load	21,241.4	56%	9,315.14
Permitted Dischargers			
DEQ	190.12	0%	190.12
DMME	127.80	0%	127.80
Total TMDL			9,633.06

¹ Urban land reductions consist of 60% reduction on residential land and 50% reduction on all other urban land categories

² Forest land reductions consist of 25% reduction on clear cut land

³ Represented both as NPS load based on land cover and as permitted waste load from DMME dischargers

⁴ Represented as linear features in the IPSI model

Table 4.2. shows the resulting TSS loads by aggregated land use category. While the IPSI model allows specific management actions to be simulated, other alternatives may be developed during TMDL implementation.

The sediment TMDL for Guest River is the sum of the three required components - WLA, LA, and MOS - as quantified in Table 4.3. The difference between the TMDL target shown in tables 4.2. and 4.3. is due to the fact that table 4.2. represents the impact of management actions chosen to approximate the TMDL target derived from the reference watershed loading rate (0.15 tons/acre/year).

Table 4.3. Guest River Sediment TMDL (tons/year)

TMDL	WLA	LA	MOS
9,635.63	317.92	9,317.71	implicit

The Margin of Safety is included implicitly in this TMDL because of the following conservative assumptions used in TMDL development: 1) The permitted dischargers typically do not discharge TSS in concentrations near the permit limit. 2) The discharge points from active strip mines are represented as part of the nonpoint source load and also included in the DMME permitted load. 3) The target load is very conservatively based on an unimpacted watershed located in the George Washington National Forest.

4.4 Critical Condition

Because there is usually a significant lag time between the introduction of sediment and nutrients to a waterbody and the resulting impact on beneficial uses, establishing this TMDLs using average annual conditions is protective of the waterbody.

4.5 Seasonal Variability

The RUSLE used in the IPSI model incorporates seasonality into the vegetative cover and rainfall parameters.

Table 5.19 Final average annual in-stream *E. coli* bacterial loads (cfu/year) modeled after TMDL allocation in the Guest River impairment.

Impairment	WLA	LA	MOS	TMDL
Guest River	9.48E+12	5.76E+13		6.71E+13
Permitted Source	Allocated Load	Design Flow (MGD)	Permitted Concentration (cfu/100mL)	
VA0023477	5.23E+10	0.030	126	
VA0077828	8.71E+12	5.000	126	
VA0092045	1.74E+10	0.010	126	
VAG400255	1.74E+09	0.001	126	
VAG400631	1.74E+09	0.001	126	
VAG400666	1.74E+09	0.001	126	
VAG400736	1.74E+09	0.001	126	
VAG400197	1.74E+09	0.001	126	
VAG400246	1.74E+09	0.001	126	
VAG400250	1.74E+09	0.001	126	
VAG400294	1.74E+09	0.001	126	
VAG400300	1.74E+09	0.001	126	
VAG400301	1.74E+09	0.001	126	
VAG400357	1.74E+09	0.001	126	
VAG400362	1.74E+09	0.001	126	
VAG400390	1.74E+09	0.001	126	
VAG400393	1.74E+09	0.001	126	
Future Load	6.71E+11			

¹ The WLA reflects an allocation for potential future permits issued for bacteria control. Any issued permit will include bacteria effluent limits in accordance with applicable permit guidance and will ensure that the discharge meets the applicable numeric water quality criteria for bacteria at the end-of-pipe.

Starting in 2007, the USEPA has mandated that TMDL studies include a daily load as well as the average annual load previously shown. The approach to developing a daily maximum load was similar to the USEPA approved approach to developing load duration bacterial TMDLs. The daily average in-stream loads for Guest River are shown in **Table 5.20**. The daily TMDL was calculated using the 99th percentile daily flow condition during the allocation time period at the numeric water quality criterion of 235 cfu/100ml. This calculation of the daily TMDL does not account for varying stream flow conditions.

Table 5.20 Final average daily in-stream *E. coli* bacterial loads (cfu/day) modeled after TMDL allocation in the Guest River impairment.

Impairment	WLA	LA	MOS	TMDL
Guest River	2.60E+10	2.67E+12		2.69E+12
Permitted Source	Allocated Load	Design Flow (MGD)	Permitted Concentration (cfu/100mL)	
VA0023477	1.43E+08	0.030	126	
VA0077828	2.39E+10	5.000	126	
VA0092045	4.77E+07	0.010	126	
VAG400255	4.77E+06	0.001	126	
VAG400631	4.77E+06	0.001	126	
VAG400666	4.77E+06	0.001	126	
VAG400736	4.77E+06	0.001	126	
VAG400197	4.77E+06	0.001	126	
VAG400246	4.77E+06	0.001	126	
VAG400250	4.77E+06	0.001	126	
VAG400294	4.77E+06	0.001	126	
VAG400300	4.77E+06	0.001	126	
VAG400301	4.77E+06	0.001	126	
VAG400357	4.77E+06	0.001	126	
VAG400362	4.77E+06	0.001	126	
VAG400390	4.77E+06	0.001	126	
VAG400393	4.77E+06	0.001	126	
Future Load	1.84E+09			

Implicit

¹ The WLA reflects an allocation for potential future permits issued for bacteria control. Any issued permit will include bacteria effluent limits in accordance with applicable permit guidance and will ensure that the discharge meets the applicable numeric water quality criteria for bacteria at the end-of-pipe.

² The TMDL is presented for the 99th percentile daily flow condition at the numeric water quality criterion of 235 cfu/100ml. The TMDL is variable depending on flow conditions. The numeric water quality criterion will be used to assess progress toward TMDL goals.



2014 Impaired Waters

SWRO Categories 4 and 5

Cause Group Code: **P11R-01-BEN** **Guest River and Tributaries**

Location: This segment begins at the confluence with Sepulcher Creek and extends downstream to the confluence with the Clinch River and also includes Critical Fork, Bear Creek, and Selcer Branch.

City / County: Norton City Scott Co. Wise Co.

Use(s): Aquatic Life

Cause(s) /
VA Category: Benthic-Macroinvertebrate Sedimentation/Siltation/ 4A
Bioassessments/ 4A

DEQ biological stations 6BGUE006.50 and 6BGUE016.54 were impaired based on VSCI scores. Probabilistic monitoring station 6BSEL001.81 was impaired based on VSCI scored. Non agency data for Critical Fork, Bear Creek indicated impairment based on VSCI scores.

Assessment Unit / Water Name / Description	Cause Category / Name	Nested	Cycle First Listed	TMDL Schedule or EPA Approval	Size
VAS-P11R_BER02A00 / Bear Creek / Bear Creek from Town of Wise raw water intake downstream to Yellow Creek confluence, WQS Section 2.	4A Benthic-Macroinvertebrate Bioassessments	Y	2014	11/13/2003	3.09
VAS-P11R_CRI01A14 / Critical Fork / Guest River tributary, WQS Section 2.	4A Benthic-Macroinvertebrate Bioassessments	Y	2014	11/13/2003	1.30
VAS-P11R_GUE01A00 / Guest River / Mainstem from Crab Orchard Creek confluence downstream to Clinch River confluence near Bangor, WQS Section 2.	4A Benthic-Macroinvertebrate Bioassessments		2014	11/13/2003	4.15
VAS-P11R_GUE02A98 / Guest River / Mainstem from Bad Branch confluence south of Coeburn downstream to Crab Orchard Creek confluence, WQS Section 2.	4A Benthic-Macroinvertebrate Bioassessments		2006	11/13/2003	3.09
VAS-P11R_GUE03A06 / Guest River / Mainstem from Sepulcher Creek confluence at Addington (mile 26.21) downstream to the Parson Branch confluence, immediately upstream of the Rt 23 bridge near Esserville, WQS Section 2.	4A Benthic-Macroinvertebrate Bioassessments		2006	11/13/2003	2.62
VAS-P11R_GUE03A98 / Guest River / Mainstem from the Parson Branch confluence downstream to the Bad Branch confluence, WQS Section 2.	4A Benthic-Macroinvertebrate Bioassessments		2006	11/13/2003	16.78
VAS-P11R_GUE04A96 / Guest River / Mainstem from headwaters near Fox Gap downstream to the confluence of Sepulcher Creek at Addington, WQS Section 2.	4A Benthic-Macroinvertebrate Bioassessments		2006	11/13/2003	8.94
VAS-P11R_SEL01A14 / Selcer Branch / Hurricane Creek tributary, WQS Section 2.	4A Benthic-Macroinvertebrate Bioassessments	Y	2014	11/23/2003	2.05
VAS-P11R_XHW01A14 / Bear Creek tributary / Flows north from Gibson Cemetery area, WQS Section 2.	4A Benthic-Macroinvertebrate Bioassessments	Y	2014	11/13/2003	1.21
Guest River and Tributaries			Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
Aquatic Life					
Benthic-Macroinvertebrate Bioassessments - Total Impaired Size by Water Type:					43.23



2014 Impaired Waters

SWRO Categories 4 and 5

Assessment Unit / Water Name / Description	Cause Category / Name	Nested	TMDL		Size
			Cycle First Listed	Schedule or EPA Approval	
VAS-P11R_GUE02A98 / Guest River / Mainstem from Bad Branch confluence south of Coeburn downstream to Crab Orchard Creek confluence, WQS Section 2.	4A Sedimentation/Siltation		2012	11/13/2003	3.09
VAS-P11R_GUE03A06 / Guest River / Mainstem from Sepulcher Creek confluence at Addington (mile 26.21) downstream to the Parson Branch confluence, immediately upstream of the Rt 23 bridge near Esserville, WQS Section 2.	4A Sedimentation/Siltation		2010	11/13/2003	2.62
VAS-P11R_GUE03A98 / Guest River / Mainstem from the Parson Branch confluence downstream to the Bad Branch confluence, WQS Section 2.	4A Sedimentation/Siltation		2010	11/13/2003	16.78
VAS-P11R_GUE04A96 / Guest River / Mainstem from headwaters near Fox Gap downstream to the confluence of Sepulcher Creek at Addington, WQS Section 2.	4A Sedimentation/Siltation		2010	11/13/2003	8.94
Guest River and Tributaries			Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
Aquatic Life					
Sedimentation/Siltation - Total Impaired Size by Water Type:					31.43

Sources:

Coal Mining	Impacts from Abandoned Mine Lands (Inactive)	Rural (Residential Areas)	Silviculture Activities
Source Unknown	Surface Mining		



2014 Impaired Waters

SWRO Categories 4 and 5

Cause Group Code: **P11R-03-BAC** **Guest River and Bear Creek**

Location: This segment extends from the Guest River mainstem at the confluence with Crab Orchard Creek downstream to the confluence with the Clinch River and Bear Creek from the confluence with Yellow Creek confluence downstream to the Guest River confluence and also includes Glade Creek and Yellow Creek.

City / County: Norton City Scott Co. Wise Co.

Use(s): Recreation

Cause(s) /

VA Category: Escherichia coli/ 5A Fecal Coliform/ 5A

DEQ AWQM station 6BBER001.14 had a 30% exceedance of the E.coli water quality standard and station 6BGUE000.23 had an 13% exceedance, station 6BGLA000.18 had a 66% exceedance, and station 6BYLO001.50 had a 41% exceedance of the E. coli water quality standard.

Assessment Unit / Water Name / Description	Cause Category / Name	Nested	Cycle First Listed	TMDL Schedule or EPA Approval	Size
VAS-P11R_BER01A98 / Bear Creek / Bear Creek from Yellow Creek confluence downstream to the Guest River confluence west of Ramsey, WQS Section 2.	5A Escherichia coli		2010	2022	1.94
VAS-P11R_GLA01A14 / Glade Creek / Yellow Creek tributary, west of Wise, WQS Section 2.	5A Escherichia coli		2014	2026	1.90
VAS-P11R_GUE01A00 / Guest River / Mainstem from Crab Orchard Creek confluence downstream to Clinch River confluence near Bangor, WQS Section 2.	5A Escherichia coli		2004	2014	4.15
VAS-P11R_GUE02A98 / Guest River / Mainstem from Bad Branch confluence south of Coeburn downstream to Crab Orchard Creek confluence, WQS Section 2.	5A Escherichia coli		2006	2024	3.09
VAS-P11R_GUE03A06 / Guest River / Mainstem from Sepulcher Creek confluence at Addington (mile 26.21) downstream to the Parson Branch confluence, immediately upstream of the Rt 23 bridge near Esserville, WQS Section 2.	5A Escherichia coli		2012	2024	2.62
VAS-P11R_GUE03A98 / Guest River / Mainstem from the Parson Branch confluence downstream to the Bad Branch confluence, WQS Section 2.	5A Escherichia coli		2012	2024	16.78
VAS-P11R_GUE04A96 / Guest River / Mainstem from headwaters near Fox Gap downstream to the confluence of Sepulcher Creek at Addington, WQS Section 2.	5A Escherichia coli		2012	2024	8.94
VAS-P11R_YLO01A98 / Yellow Creek / Mainstem from headwaters at Berry Chapel to Bear Creek confluence, WQS Section 2.	5A Escherichia coli		2014	2026	3.16

Guest River and Bear Creek

Recreation

Estuary
(Sq. Miles)

Reservoir
(Acres)

River
(Miles)

Escherichia coli - Total Impaired Size by Water Type:

42.58

Assessment Unit / Water Name / Description	Cause Category / Name	Nested	Cycle First Listed	TMDL Schedule or EPA Approval	Size
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2014 Impaired Waters

SWRO Categories 4 and 5

Assessment Unit / Water Name / Description	Cause Category / Name	Nested	Cycle First Listed	TMDL Schedule or EPA Approval	Size
VAS-P11R_GUE01A00 / Guest River / Mainstem from Crab Orchard Creek confluence downstream to Clinch River confluence near Bangor, WQS Section 2.	5A Fecal Coliform		2002	2014	4.15
Guest River and Bear Creek Recreation			Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
Fecal Coliform - Total Impaired Size by Water Type:					4.15

Sources:

Rural (Residential Areas) Sewage Discharges in Unsewered Areas

ATTACHMENT 5

T & E Species

Tier Reaches Group Powell River (60102061)

36,58,50.9 -82,37,25.9
is the Search Point

Display Item Location is not at center

Show Position Rings

☒ Yes ☐ No
1 mile and 1/4 mile at the Search Point

Show Search Area

☒ Yes ☐ No
2 Search distance miles radius

Search Point is at map center

Base Map Choices

Topography

Map Overlay Choices

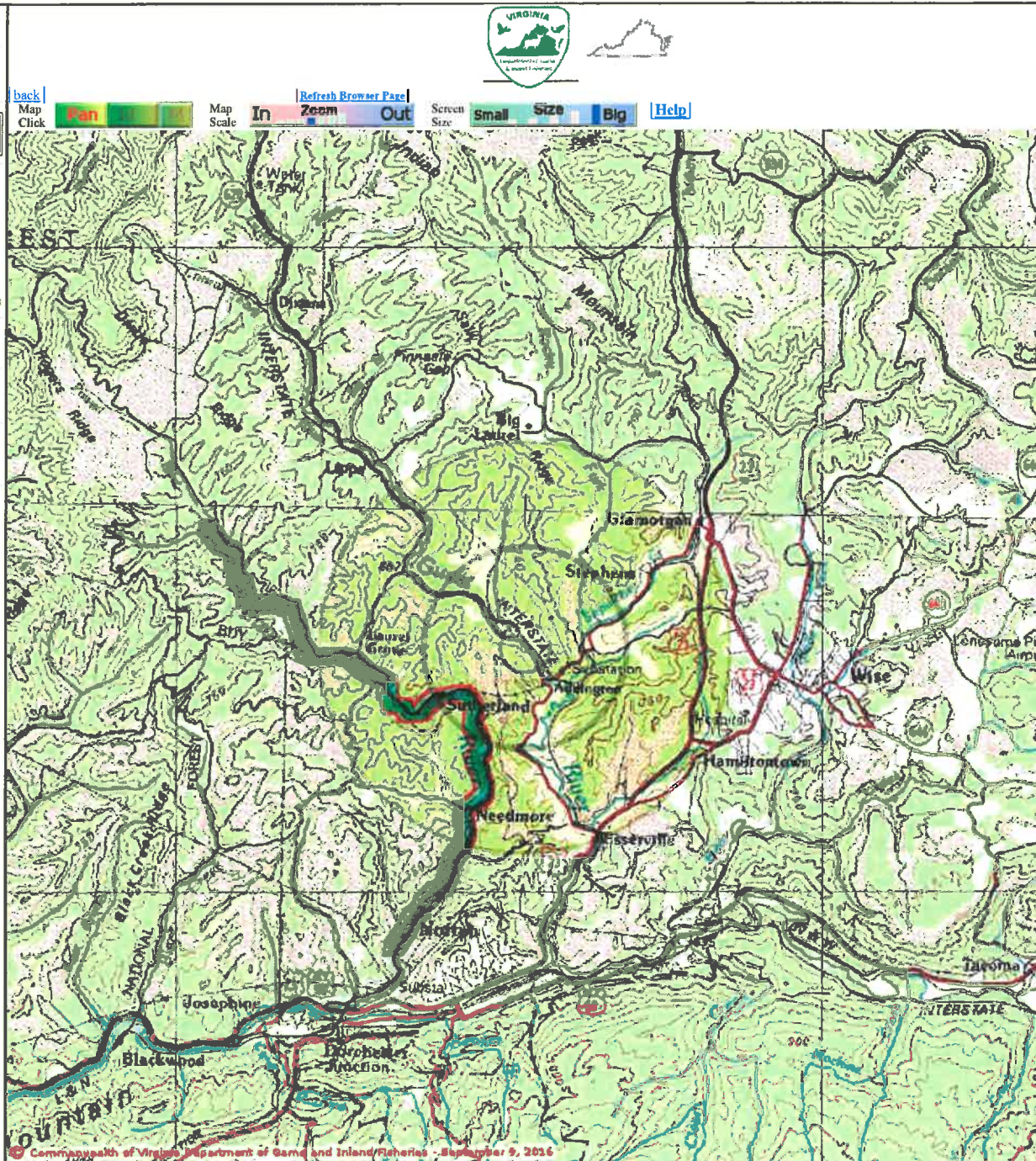
Current List: Position, Search, Observation

Map Overlay Legend

Position Rings
1 mile and 1/4 mile at the Search Point

2 mile radius Search Area

Data Observation Site



Point of Search 36,58,50.9 -82,37,25.9

Map Location 36,58,50.9 -82,37,25.9

Select Coordinate System: ☒ Degrees, Minutes, Seconds Latitude - Longitude

☐ Decimal Degrees Latitude - Longitude

☐ Meters UTM NAD83 East North Zone

☐ Meters UTM NAD27 East North Zone

Base Map source: USGS 1:100,000 topographic maps (see Microsoft.terraServer-usa.com for details)

Map projection is UTM Zone 17 NAD 1983 with left 347476 and top 4101975. Pixel size is 16 meters. Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 1000 columns by 1000 rows for a total of 1,000,000 pixels. The map display represents 16,000 meters east to west by 16,000 meters north to south for a total of 256.0 square kilometers. The map display represents 52,502 feet east to west by 52,502 feet north to south for a total of 98.8 square miles.

Topographic maps and Black and white aerial photography for year 1990+- are from the United States Department of the Interior, United States Geological Survey. Color aerial photography acquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.

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map assembled 2016-09-09 13:57:27 (qa/qc March 21, 2016 12:20 - tn=768892.0 dist=3218 I)
\$poi=36.9808056 -82.6238611 \$query=select Convert(varchar(10),floor((minx+maxx)/2)) + '' + Convert
(varchar(10),floor((miny+maxy)/2)) from vafwis_tables.dbo.cvTierReaches where SEG_ID in
(601020610474)

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VaFWIS Initial Project Assessment Report Compiled on 9/9/2016, 1:15:04 PM[Help](#)

Known or likely to occur within a **2 mile radius around point 36,58,51.0 82,37,26.0**
in **195 Wise County, 720 Norton City, VA**

[View Map of](#)
[Site Location](#)

522 Known or Likely Species ordered by Status Concern for Conservation
(displaying first 41) (41 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
050023	FESE	Ia	<u>Bat, Indiana</u>	<u>Myotis sodalis</u>		BOVA
060020	FESE	Ia	<u>Pearlmyssel, birdwing</u>	<u>Lemiox rimosus</u>		BOVA
060051	FESE	Ia	<u>Pigtoe, finerayed</u>	<u>Fusconaia cuneolus</u>		BOVA
060052	FESE	Ia	<u>Pigtoe, shiny</u>	<u>Fusconaia cor</u>		BOVA
050021	FESE	IIa	<u>Bat, gray</u>	<u>Myotis grisescens</u>		BOVA
060146	FESE	IIa	<u>Bean, Raved</u>	<u>Villosa fabalis</u>		BOVA
060121	FESE	IIa	<u>Kidneyshell, fluted</u>	<u>Ptychobranhus subtentum</u>		BOVA
010331	FTST	Ia	<u>Madtom, yellowfin</u>	<u>Noturus flavipinnis</u>		BOVA
050022	FTST	Ia	<u>Bat, northern long-eared</u>	<u>Myotis septentrionalis</u>		BOVA
010111	FTST	Ic	<u>Chub, slender</u>	<u>Erimystax cahni</u>		BOVA
070118	FTSE	Ic	<u>Crayfish, Big Sandy</u>	<u>Cambarus callainus</u>		BOVA
050020	SE	Ia	<u>Bat, little brown</u>	<u>Myotis lucifugus lucifugus</u>		BOVA
050027	SE	Ia	<u>Bat, tri-colored</u>	<u>Perimyotis subflavus</u>		BOVA
060006	SE	Ib	<u>Floater, brook</u>	<u>Alasmidonta varicosa</u>		BOVA
060080	SE	IIa	<u>Heelsplitter, Tennessee</u>	<u>Lasmigona holstonia</u>		BOVA,Habitat
060027	SE	IIIa	<u>Elephantear</u>	<u>Elliptio crassidens</u>		BOVA
060168	SE	IIIb	<u>Deertoe</u>	<u>Truncilla truncata</u>		BOVA
040267	SE		<u>Wren, Bewick's</u>	<u>Thryomanes bewickii</u>		BOVA
040293	ST	Ia	<u>Shrike, loggerhead</u>	<u>Lanius ludovicianus</u>		BOVA
060069	ST	IIIa	<u>Riversnail, spiny</u>	<u>Io fluvialis</u>		BOVA
060086	ST	IIIa	<u>Sandshell, black</u>	<u>Ligumia recta</u>		BOVA
010076	ST	IVc	<u>Shiner, emerald</u>	<u>Notropis atherinoides</u>		BOVA
060163	ST	IVc	<u>Papershell, fragile</u>	<u>Leptodea fragilis</u>		BOVA
040292	ST		<u>Shrike, migrant loggerhead</u>	<u>Lanius ludovicianus migrans</u>		BOVA
030012	CC	IVa	<u>Rattlesnake, timber</u>	<u>Crotalus horridus</u>		BOVA
040306		Ia	<u>Warbler, golden-winged</u>	<u>Vermivora chrysoptera</u>		BOVA
050024		Ia	<u>Myotis, eastern small-footed</u>	<u>Myotis leibii</u>		BOVA
010343		Ib	<u>Darter, ashv</u>	<u>Etheostoma cinereum</u>		BOVA
070181		Ic	<u>Crayfish, Big Stone</u>	<u>Cambarus sp.</u>		BOVA
010341		IIa	<u>Logperch, blotchside</u>	<u>Percina burtoni</u>		BOVA
020011		IIa	<u>Frog, mountain chorus</u>	<u>Pseudacris brachyphona</u>		BOVA,Habitat
040052		IIa	<u>Duck, American black</u>	<u>Anas rubripes</u>		BOVA
040320		IIa	<u>Warbler, cerulean</u>	<u>Setophaga cerulea</u>		BOVA
040140		IIa	<u>Woodcock, American</u>	<u>Scolopax minor</u>		BOVA
060050		IIa	<u>Pigtoe, Tennessee</u>	<u>Fusconaia barnesiana</u>		BOVA
020030		IIb	<u>Salamander, green</u>	<u>Aneides aeneus</u>		BOVA
040203		IIb	<u>Cuckoo, black-billed</u>	<u>Coccyzus erythrophthalmus</u>		BOVA
010075		IIc	<u>Shiner, popeye</u>	<u>Notropis ariommus</u>		BOVA
040304		IIc	<u>Warbler, Swainson's</u>	<u>Limnolophus swainsonii</u>		BOVA
060004		IIc	<u>Elktoe</u>	<u>Alasmidonta marginata</u>		BOVA
080219		IIc	<u>Stonefly, lobed roach-like</u>	<u>Tallaperla lobata</u>		BOVA

To view **All 522 species** [View 522](#)

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need

Virginia Wildlife Action Plan Conservation Opportunity Ranking.

a - On the ground management strategies/actions exist and can be feasibly implemented; b -

On the ground actions or research needs have been identified but cannot feasibly be implemented at this time; c -

No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams

N/A

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Habitat Predicted for Aquatic WAP Tier I & II Species (1 Reach)

[View Map Combined Reaches from Below of Habitat Predicted for WAP Tier I & II Aquatic Species](#)

Stream Name	Tier Species		View Map
	Highest TE *	BOVA Code, Status *, Tier **, Common & Scientific Name	
Powell River (60102061)	SE	060080 SE IIa <u>Heelsplitter, Tennessee</u> <u>Lasmigona holstonia</u>	<u>Yes</u>

Habitat Predicted for Terrestrial WAP Tier I & II Species

BOVA Code	Status*	Tier**	Common Name	Scientific Name	View Map
020011		IIa	<u>Frog, mountain chorus</u>	<u>Pseudacris brachyphona</u>	<u>Yes</u>

Public Holdings:

N/A

PixelSize=64, Anadromous=0.015188, BECAR=0.013607, Bats=0.013083, Buffer=0.09996, County=0.074888, Impediments=0.01443, Init=0.149575, PublicLands=0.016101, SppObs=0.2217, TFWaters=0.016552, TierReaches=0.085741, TierTerrestrial=0.072399, Total=0.883829, Tracking_BOVA=0.161722, Trout=0.016456